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Patch no. 1, short: stems 15 to 20 cm.: peduncle short, 6 to 12 mm.: fruit almost sessile on some; carpels 12 to 18: leaves rugose, much incised resulting in many minor lobes, though but five basal veins: color of stems mostly green, slightly purple at base.

Patch no. 2, medium: stems 25 to 30 cm., purplish from base ⅓ of height: peduncles 18 to 25 mm.: carpels few: leaves coarsely serrate, minor lobes rare, scarcely pubescent, large, many of them 30 cm. across.

Patch no. 3, tall: stems 30 to 37.5 cm. purplish from base ⅔ of height: peduncles 35 mm.: carpels 25 to 30: leaves slightly rugose, lateral diameter of lower leaves 25 to 30 cm., minutely pubescent.

New Ross, Indiana.

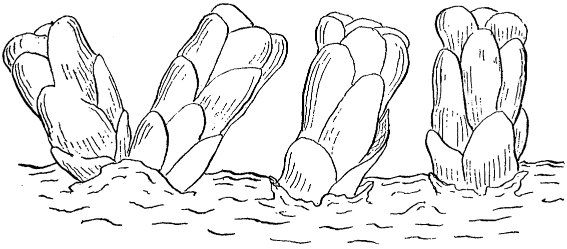
EXPLANATION OF PLATE VIII.—Fig. 1, seedling 2 or 3 days after germination. Fig. 2, seedling at the end of the first season's growth. Fig. 3, second year from the seed. Fig. 4, *a*, top of flowering plant early in May, stipular eminences plainly shown at base of lower leaf; *b*, flower with most of the stamens removed. Fig. 5, part of stem with fruit, late in July. Fig. 6, stipules; *a*, part of fertile stem with amplexicaul petiole of lower leaf, showing tubercular stipules; *b*, caudex with portion of radical leaf petiole, old bud-scales dissected back and showing stipules at base enveloping the rudimentary hibernaculum, depauperate leaf protruding, as observed in June. Fig. 7, stipules as bud-scales; *a*, bud-scales at base of fertile stem, early in May; *b* and *c*, buds formed in the axil of a radical leaf, as they appear in October or November. with outer scales dissected back; *b*, one of the bud-scales surmounted by a depauperate leaf; *c*, same with merely fimbriate attachment; Fig 8, horizontal root fiber, with adventitious bud and radical leaf. Fig. 9, rhizome with most of the fibrous roots removed, showing perpendicular character of axis. Fig. 10, series showing transition from floral bract to leaf, as sometimes observed in exceptional cases where third leaves are produced; *a*, part of upper portion of stem showing attachment of sessile leaf, floral bract, and fruit soon after anthesis; *b* and *c*, same with bracts more leaf-like.

Two undescribed species of Apodanthes.

B. L. ROBINSON.

(WITH PLATE IX.)

It is now more than twenty-five years since the discovery, in western Arizona, of *Pilostyles Thurberi* Gray, a diminutive parasite which, notwithstanding great disparity in size, is nearly related to the famous Rafflesia of India. Although the genus Pilostyles, or more correctly, Apodanthes § Pilostyles, is well represented in South America, the rare A. Thur-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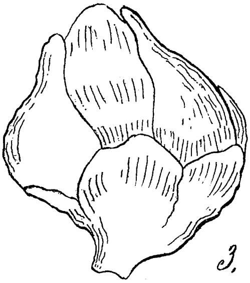
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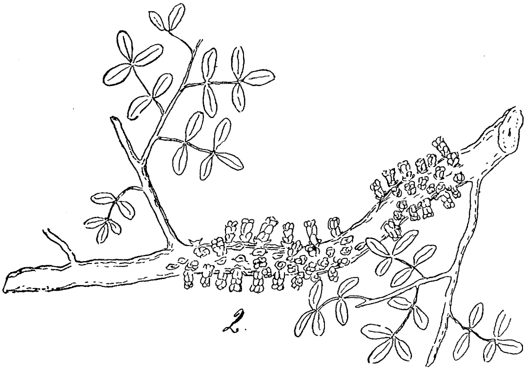
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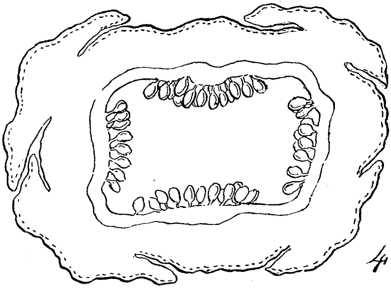
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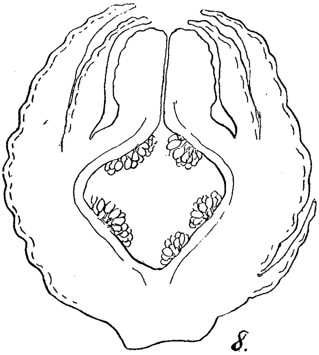
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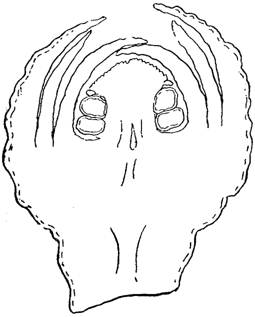
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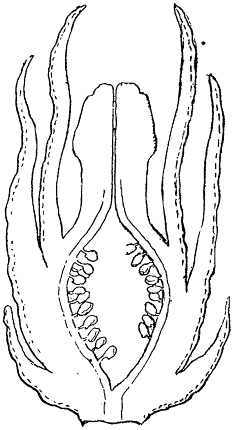
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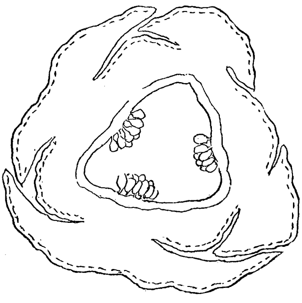
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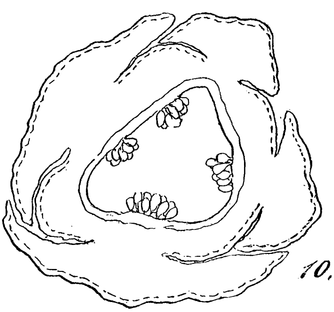
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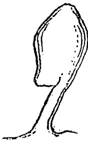
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ROBINSON on APODANTHES.

beri has until lately been its only known North American species. Among the many discoveries made by Mr. C. G. Pringle, however, two new members from northern Mexico have been added to the genus; and specimens of these interesting plants (nos. 1949, and 1950 of Pringle's *Plantae Mexicanae*) have recently been distributed as *Apodanthes Pringlei* Watson, and *A. globosa* Watson. Owing to the diminutive size of the plants in question, their study entailed methods not generally necessary in the systematic examination of phanerogams, and the publication of descriptions of the new species has been much delayed. At the suggestion of Dr. Watson, however, the writer has lately made a microscopic examination of the material in the Gray Herbarium, and presents, as a result, the following descriptions, which are as full as the limited stages of development represented permit.

Apodanthes Pringlei Watson.— Flowers densely crowded cylindric, becoming ovoid, one and one-half lines long, aromatic; bracts and divisions of the floral envelope twelve to fifteen, erect, very unequal in length, imbricated in three (or four) obscurely defined series, ovate to oblong, obtuse, entire or minutely erose, dull brown, the innermost yellowish at the ends: ovary inferior or nearly so, usually quadrangular in cross-section, and with four distinct though rather broad placentæ; style well developed, fully half as long as the ovary; stigma ovoid, umbonate on the slightly produced non-stigmatic apex; fruit broadly ovoid, two lines long, one and one-half lines in diameter, covered with the closely appressed bracts: staminate flowers unknown.—Occurs upon small woody branches of *Dalea frutescens* Gray; collected by C. G. Pringle in the Sierra Madre near Monterey, June 27, 1888.

The placentation of this species shows more or less variability, not only in different flowers, but even at different heights in the same ovary. In most cases a cross-section directed through the middle of the ovary shows (as in fig. 4) the placentæ in a regular relation to the surrounding bracts. In other instances, however, no such correspondence is apparent, and the placentæ are not even symmetrical in relation to each other.

Apodanthes globosa Watson.— Expanded flowers and fruit unknown: buds scattered, globose, two-thirds to one line in diameter; bracts and divisions of the floral envelope eleven to thirteen, subequal, in three distinct decussate series, broadly ovate to orbicular, minutely erose, thickish, transversely roughened on the outer surface, very dark and shining purple : in the staminate flowers the anthers about thirty, globose, sessile, borne in two crowded rows upon the shaft of the staminal column, of which the upper expanded portion is convex, and minutely papillose over its entire surface, the papillae upon the edges being slightly more prominent ; a rudimentary ovary (?) is represented by a narrow central cavity in the base of the column: in the pistillate flowers ovary inferior, three to four angled, but with no regular placentæ, the ovules being distributed in small isolated groups over the entire inner surface; style scarcely any, the stigma large, hemispherical, umbonate.—Occurs on small branches of *Bauhinia lunarioides* Gray; collected by C. G. Pringle in the Sierra Madre near Monterey, June 30, 1888.

This species considerably resembles in size and form *A. Blanchetii* Gard. of Brazil, also parasitic on a Bauhinia. In the latter, however, the bracts are described as fimbriate-ciliate on the margins, while in A. globosa they are at most minutely erose. Furthermore the ovules of A. Blanchetii, according to Sir Joseph Hooker,[1] are crowded over the whole surface of the ovary, while in A. globosa they occur in rather small isolated groups. The single staminate flower of A. globosa, which was found in the material investigated, occurred upon the same branch with many pistillate flowers. Although a considerable number of flowers of A. Pringlei were examined, all proved to be fertile. The "thallus" of A. Pringlei, investigated by cutting sections of the infested branches of Dalea, appears at the time of flowering to consist of dense, isolated, more or less wedge-formed masses of tissue, extending not only through the cortex but to a considerable depth along the medullary rays into the woody tissue of the host.

Cambridge, Mass., Nov., 1890.

EXPLANATION OF PLATE IX.— *Apodanthes Pringlei* Watson.— Fig. 2 represents the habit of the parasite as it occurs upon the host plant; fig. 1, flowers; fig. 3, fruit; fig. 4, cross-section of the flower, showing the usual placentation; fig. 5, median longitudinal section of the flower; fig. 6, ovule. All the drawings except fig. 2 are considerably magnified.

Apodanthes globosa Watson.— Fig. 7, longitudinal section of a staminate flower; fig. 8, the same of a pistillate flower; figs. 9 and 10, successive (rather thick) cross-sections, showing the varying placentation at different heights in the ovary. This may also be clearly seen in the longitudinal section, fig. 8.

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[1] In De Candolle's *Prodromus*, vol. xvii, p. 115.